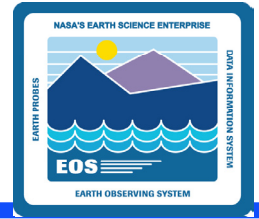


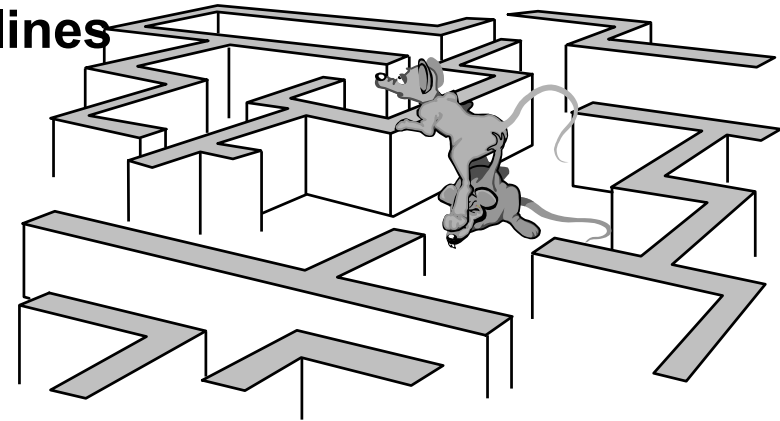
CONFIGURATION MANAGEMENT

EMD Training

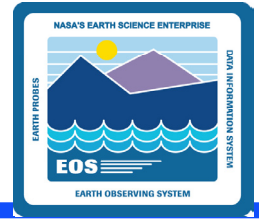
Overview of Lesson



- **Introduction**
- **Configuration Management Topics**
 - **EMD Configuration Management (CM) Activities**
 - **Configuration Control Boards (CCBs)**
 - **Configuration Change Requests (CCRs)**
 - **Software Baselines and Changes**
 - **Changes to Hardware Baselines**
 - **Changes to the Baseline**
- **Practical Exercise**

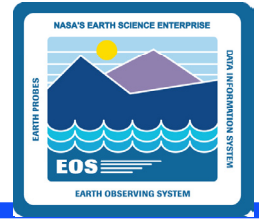


Objectives



- **Overall: Proficiency in ECS Configuration Management**
 - Describe the EMD CM activities
 - List Configuration Control Boards (CCBs), roles, and responsibilities
 - Process a Configuration Change Request (CCR)
 - Review Configuration Parameters in Configuration Registry
 - Access baseline information
 - Process a change to the inventory

Importance

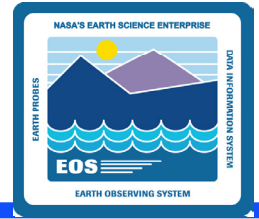


Lesson provides preparation for several roles to ensure effective CM for implementation of system changes

- **CM Administrators**
- **System Engineers, System Test Engineers, Maintenance Engineers**

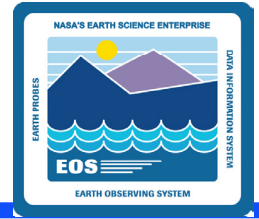


EMD CM Activities



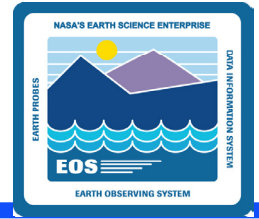
- **Configuration Management team's primary responsibility is to provide and protect the integrity of the EMD baseline**
 - Also must ensure that baseline changes are made using formal processes
- **Objectives of EMD configuration control are to ensure:**
 - Changes are adequately defined, assessed for technical, cost, and schedule impacts by the EMD office(s), and formally considered by the appropriate CCB
 - Only approved changes are incorporated in the appropriate baseline in an orderly and systematic manner
 - Actions assigned by each CCB are monitored and brought to closure

EMD CM Activities (Cont.)



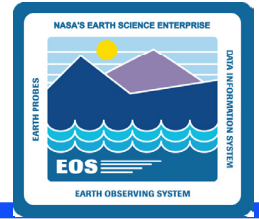
- **DAAC Unique Extensions (DUEs)**
 - **SCDV CCB reviews the DUEs for potential impact to the ECS Configuration Baseline System and for potential inclusion in the ECS Baseline System**
 - **If warranted, the SCDV CCB authorizes inclusion in the ECS Configuration Baseline System**

EMD CM Activities (Cont.)



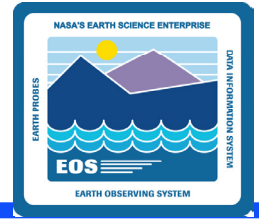
- **Software Configuration Management (SCM)**
 - Uses the CCR process to release COTS and custom software to the sites
 - A custom software component can only change with the issuance of an NCR using the Distributed Defect Tracking System (DDTS™) tool
 - The base upon which the change is made is the custom code design baseline, which is maintained by the ClearCase™ software configuration management tool

EMD CM Activities (Cont.)



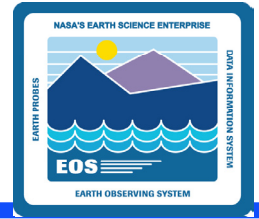
- **Software Configuration Management Tools**
 - **Remedy™ Trouble Ticketing**
 - **Distributed Defect Tracking System (DDTS™)**
 - **Software Turnover Tracking System (STTS)**
 - **ClearCase™ Software Configuration Management System (ClearCase™)**
 - **ClearCase™ Baseline Manager (BLM)**
 - **EMD Change Manager (ECM)**
 - **ClearCase™ Delivery Tool**
 - **Engineering Software Delivery Daemon**
 - **Source Code Delivery Tool**
 - **Custom Code Installation Emulator**

EMD CM Activities (Cont.)



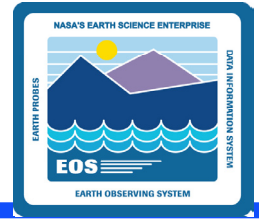
- **EMD Baseline Information System (EBIS)**
 - Implemented with two physical web servers
 - Pete
 - cmdm
 - EBIS URLs are:
 - <http://pete.hitc.com/baseline/> (Internal EBIS web server)
 - <http://cmdm.east.hitc.com/baseline/> External EBIS web server)

EMD CM Activities (Cont.)



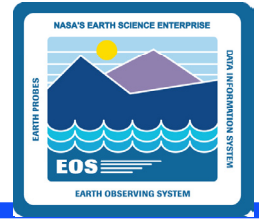
- **Library Maintenance**
 - **EMD program uses two distinct libraries**
 - **Document Center (maintained by the Data Management group)**
 - **COTS Software Library (managed by the ClearCase™ Support Group)**

EMD CM Activities (Cont.)



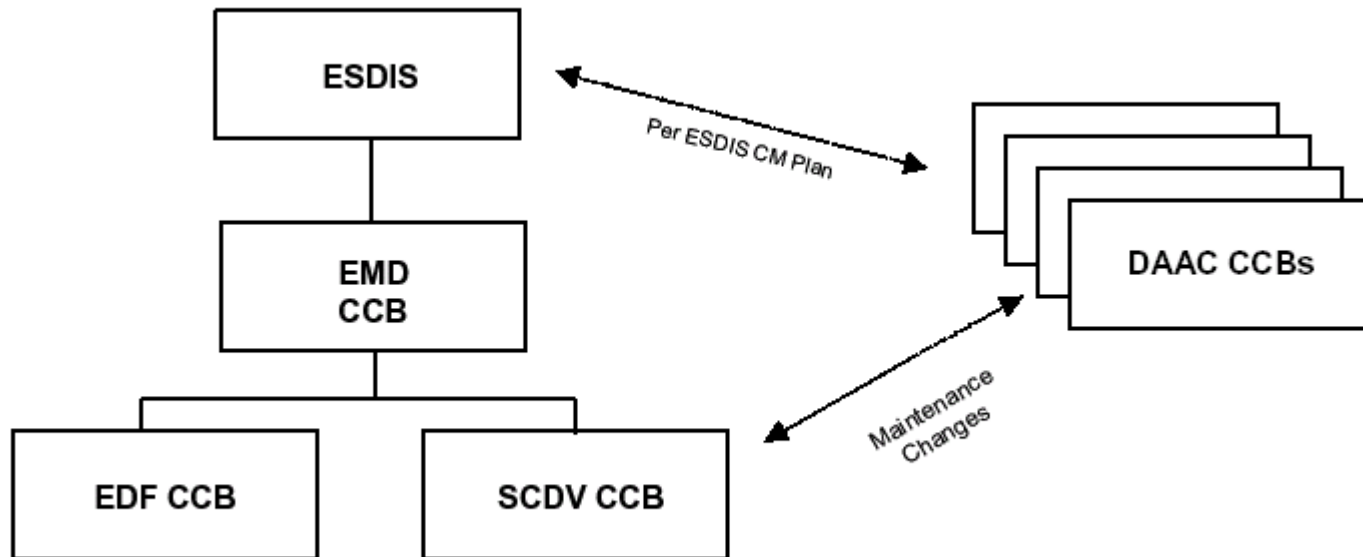
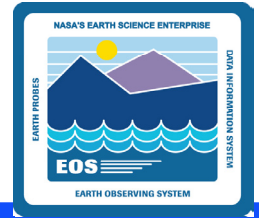
- **Configuration identification**
 - Maintenance and control of technical documentation
- **Configuration status accounting**
 - Recording and reporting information about the configuration status of ECS documentation, hardware, and software
 - BLM reports

EMD CM Activities (Cont.)

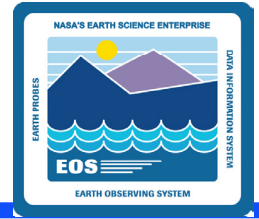


- **Configuration audits**
 - **Physical Configuration Audits (PCAs) are formal assessments of the actual configurations of all baselined EMD hosts**
 - **Software PCAs compare the COTS software, custom software, O/S patches, and UNIX® kernel parameters of the actual hosts to the EBIS design baseline**
 - **Hardware PCAs compare the physical hardware to the EBIS design baseline, and covers items such as memory, disks, and host configuration**
 - **Functional Configuration Audits (FCAs) are conducted to assure that each EMD product meets its specified performance requirements to the extent that can be determined by testing**

Configuration Control Boards

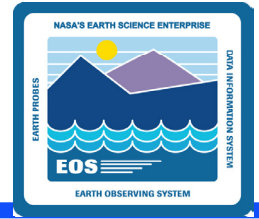


Configuration Control Boards (Cont.)



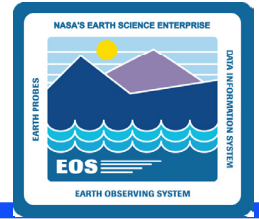
- **ESDIS CCB**
 - Level 2 board responsible for interfacing with higher-level boards for changes that affect Level 1 requirements, controlling Level 2 requirements, approving specified documentation, and procurements
- **EMD CCB**
 - Responsible for establishing and managing the configured baselines at the project level
- **EDF (Infrastructure) CCB**
 - Responsible for establishing and managing development
- **Science and Development (SCDV) CCB**
 - Has the authority and responsibility for controlling ECS releases

Configuration Change Requests (CCRs)



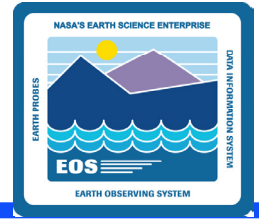
- **No undocumented changes**
 - all requests for change documented using CCR form
 - CCR generated against the baseline affected by the proposed change
 - Form can be completed electronically
 - Word processing form
 - Change Request Manager tool (CM Administrator)
- **CCB review**
 - CCR submitted to appropriate CCB
 - CCR form may also be a cover sheet for a request to CCB for a deviation or waiver from baseline

Configuration Change Requests (CCRs)



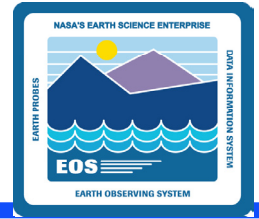
- **Modification Requests (MRs)**
 - Can include requests for corrective, adaptive, and/or perfective changes
 - All technology refresh requests, including both hardware and software, are to use the MR process
 - Currently, the ROM Board and CCBs are used to implement the MR process

Software Baselines and Changes



- **CSG ships the physical media, or delivers the files using the ClearCase™ Delivery Tool to the designated sites**
 - Electronic delivery is performed via secure copy (scp) to target DAACs
- **DAAC CCB approves the installation of the delivered software into a DAAC Operational Baseline (e.g., a mode, “OPS”, “TS1”, etc.)**
 - Software is installed in accordance with CCR installation instructions, and in accordance with local DAAC procedures/processes

Configuration Parameters



- **Default settings may or may not be optimal for local operations**
- **Changing parameter settings**
 - May require coordination among Configuration Management Administrator, Database Administrator, and Operations personnel
 - Some parameters accessible on GUIs
 - Some parameters changed by editing configuration files
 - Some parameters stored in databases
- **Configuration Registry**
 - Script loads values from configuration files
 - GUI for display and modification of parameters
 - Move (re-name) configuration files so ECS servers obtain needed parameters from Registry Server when starting

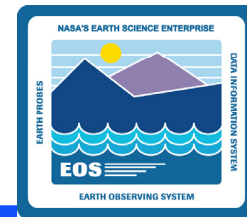
The EOS logo is a square emblem with a blue border. At the top, it reads "NASA'S EARTH SCIENCE ENTERPRISE". The central graphic depicts a yellow sun above a purple mountain range, with blue wavy lines representing water below. The letters "EOS" are prominently displayed in white on a dark blue background. To the left of the logo, the text "EARTH PROFILES" is written vertically, and to the right, "DATA INFORMATION SYSTEM" is written vertically. Below the logo, the text "EARTH OBSERVING SYSTEM" is written horizontally.

The screenshot shows the 'ECS REGISTRY (1.0)' application. The 'Attribute Tree Name' pane on the left displays a tree structure with 'TS2_5B.01' selected. The 'Attribute Listing <75>' pane in the center shows a table of attributes for 'EcInGran'. The 'Attribute Information' pane on the right displays details for the selected attribute, 'EcInGran', including its name, IDs, site, version, and various polling and staging server settings.

Attribute Listing <75>	
PseudoAttribute	One Two Three
Name	EcInGran
ProgramID	5800000
ApplicationID	5000000
Site	vatc
DeltaTime	3600
MajorVersion	1
MinorVersion	0
Release	B
SubSysName	INS
AppLogSize	5000000
AppLogLevel	0
HostPolicy	multiple
ServerDescription	This is ../subsyst/ecs/server
oid_EcInGranObj	80e4c765-7b28-1023-891b-08000
oid_EcAgManager_TS2	80e4c766-7b28-1023-891b-08000
ListenThreads	20
Protocol	EMPTY
KeyFile	CUSTOM/security/EcInGran.Keyf
PrincipalName	EcInGran
AcIPermission	x
AcIDBTableName	IngestAcItable
AcIName	InGranObj
AppStrtNum	12345
DBAcIKey	PfAcIKey
DBLibrary	SYBASE_CT
DBServer	t1mss07_srvr
DBLoginName	acluser

Attribute Information
Mapped To Mode: TS2

Configuration Registry (Cont.)



Attribute Information

Attribute Name:

Description:

Attribute Properties

Attribute Data Type: ▼

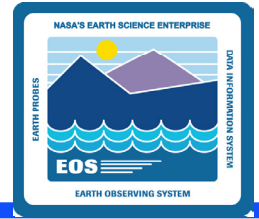
MIN:

MAX:

Configured Values

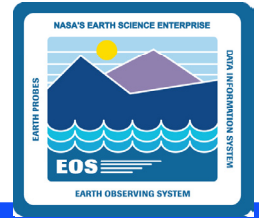
Change Comment

Hardware Baselines and Changes

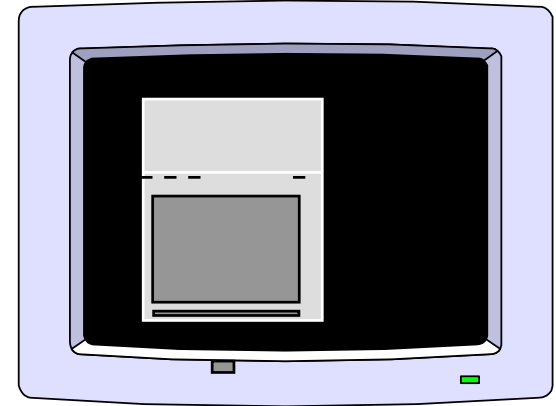


- **Change Scenarios**
 - COTS hardware problem repair that requires a CCR
 - System enhancement
- **Repair with part of same make, model, version does not require CCR**
- **Change in make, model, version of a part to be used for repair, e.g., in an emergency, necessitates CCR to document the change**
 - Review/approval by site CCB
 - EMD/ESDIS review for impacts/applicability to other sites
 - Provision of controlled document updates to Document Maintenance and entry into CM
 - CM system updates to reflect change
 - Audits (FCA/PCA)

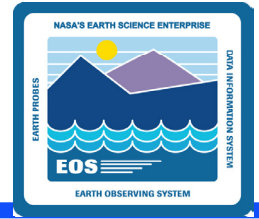
Changes to the Baseline



- **CM Tools for baseline changes**
 - **Baseline Manager (BLM): ClearCase**
 - **Inventory/Logistical Maintenance (ILM) Manager: Remedy**
- **Related tools**
 - **From Management Subfunction software**
 - **Trouble Ticket System (TTS)**
 - **Problem reporting and tracking**
 - **Used by users, operators, system administrators**

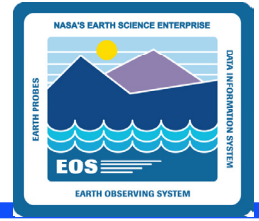


Baseline Terms and Concepts



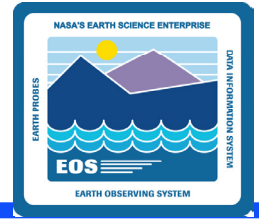
- ***Baseline Management*** is to identify and control baselined versions of hardware and software, and maintain a complete history of baseline changes
- ***Control Item*** is any ECS item under version control by CM
- ***Configuration Item (CI)*** is an aggregation of hardware, firmware, software, or any discrete component or portion, which satisfies an end user function and is designated for configuration control
- ***Baseline*** is a configuration identification document or set of such documents formally designated by the Government at a specific time in the life cycle of a CI
- ***Configured Article*** is a control item reportable as part of the Configured Articles List (CAL)

Baseline Terms and Concepts (Cont.)



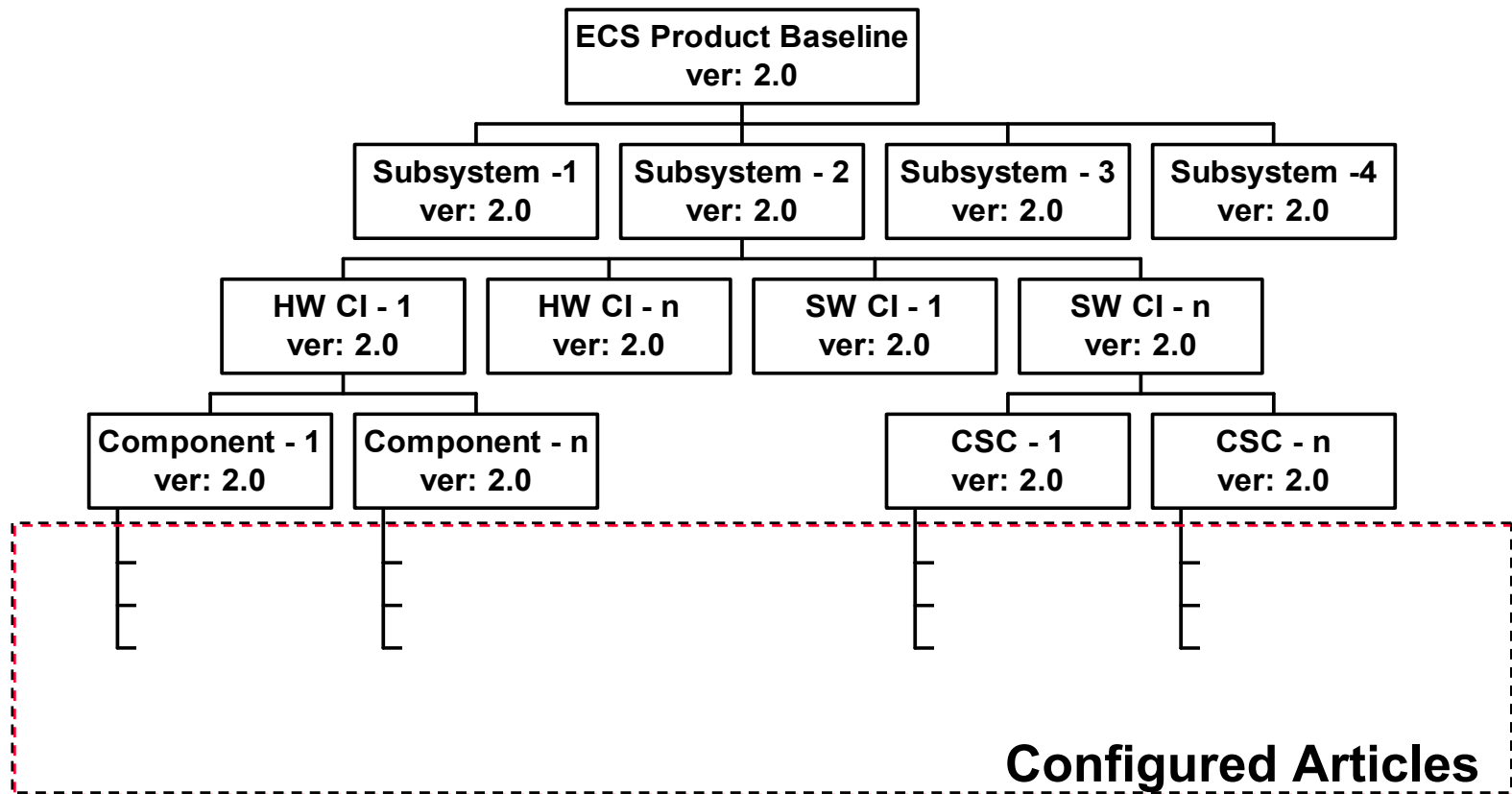
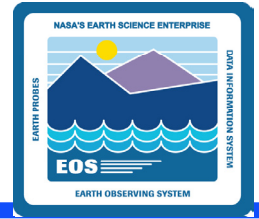
- **ECS Structure and Baseline Terms**
 - **Assembly:** an item made up of other items
 - **Parent:** a higher-level item (e.g., an assembly)
 - **Child:** an item that is a component of a higher-level item
 - **Bill of Material:** list of items that comprise an assembly
 - **Product Structure:** the parent-child pairings that define the bill of material for an assembly; each product structure record specifies the effective dates and quantities for a single component of a parent for each engineering change
 - **Active Date:** the date a component becomes effective in an assembly's bill of material
 - **Inactive Date:** the date a component is no longer effective in an assembly's bill of material

Baseline Terms and Concepts (Cont.)

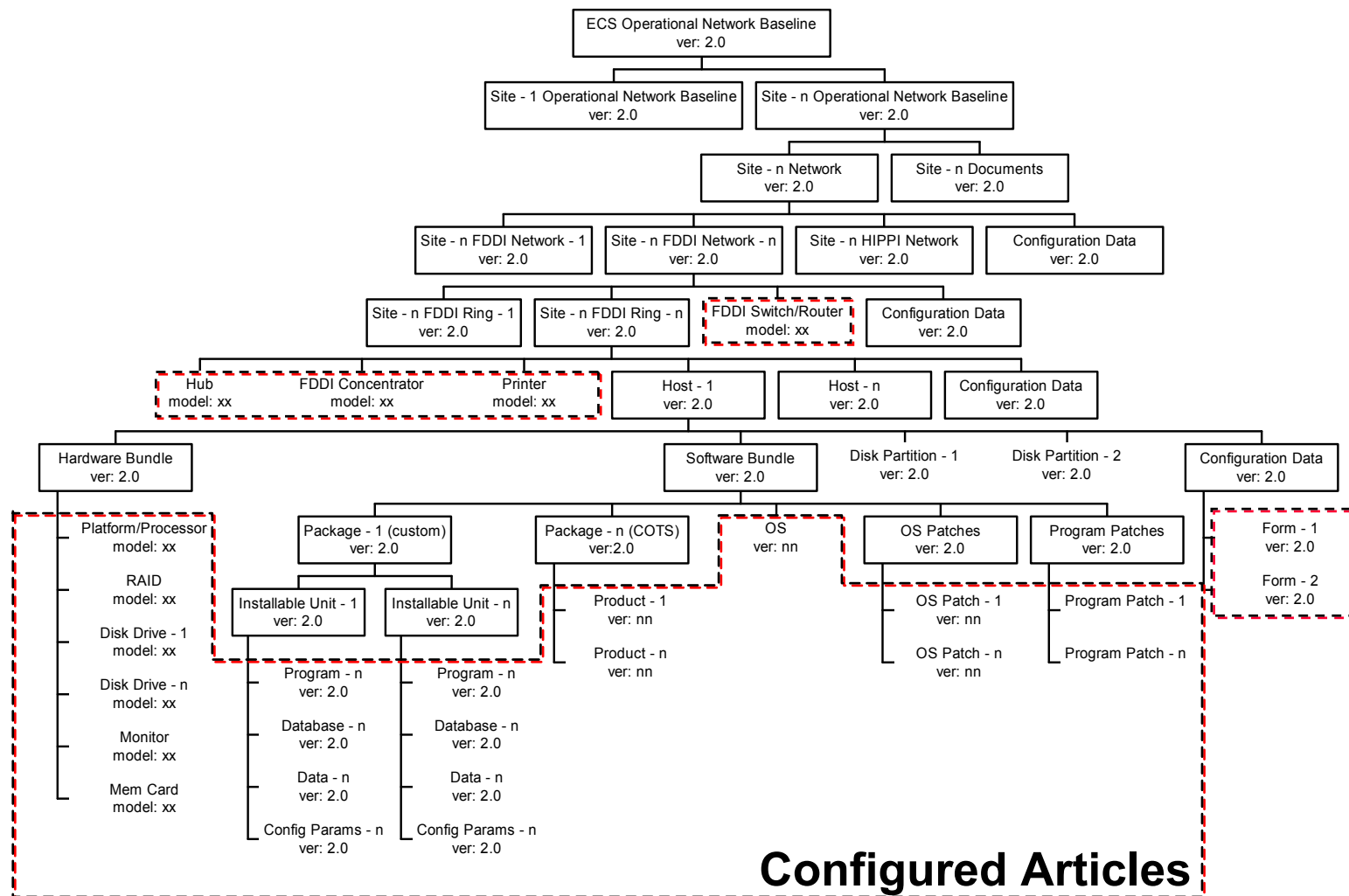
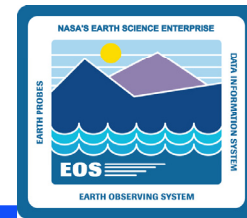


- **ECS Structure and Baseline Terms (Cont.)**
 - ***Engineering Change***: a mechanism for grouping, reporting, and controlling product changes collectively
 - ***Revision***: sequence number of a product structure change to an assembly; signifies a change to the configuration of an assembly that does not alter its form, fit, or function
 - ***Implementation Status***: a record describing the deployment of a control item to a site and the current state and associated date of its implementation; each control item has one record for each site to which it is deployed
 - ***Exporting Data***: creating a formatted file or records extracted from the BLM database; control item engineering change, product structure, and interdependency records may be extracted and sent to another BLM site via ftp
 - ***Importing Data***: loading BLM data from a formatted file

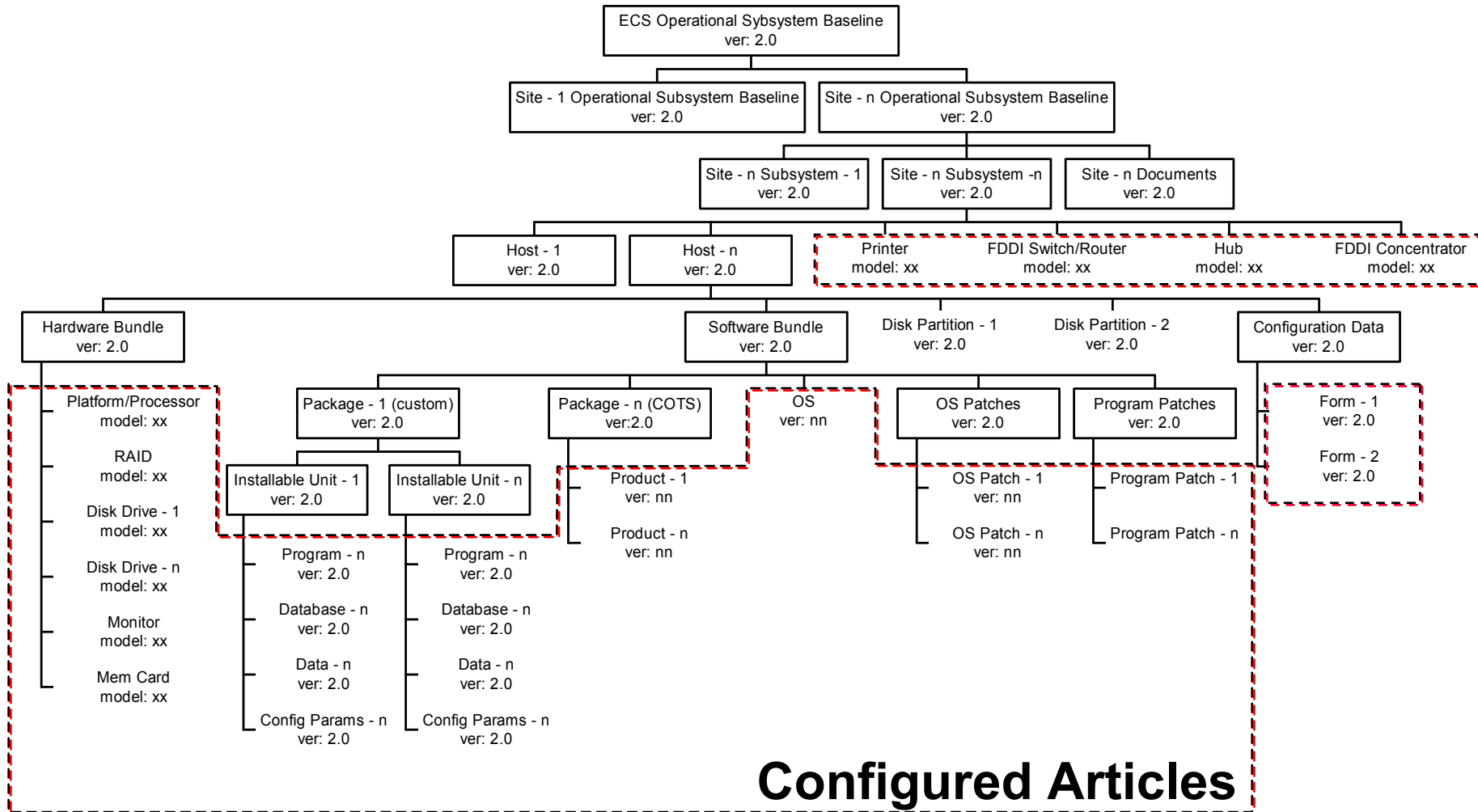
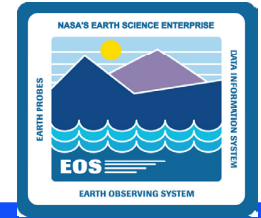
Product Structure - Design View



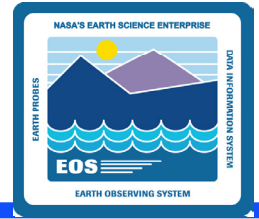
Product Structure - Operational (Network) View



Product Structure - Operational (Subsystem) View

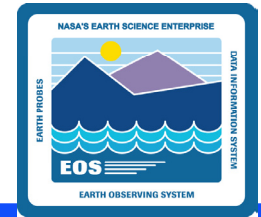


Baseline and Inventory Management: Tools



- **Baseline Management (BLM): ClearCase**
 - **Manages Baseline Records on software, scripts, GUIs**
 - **Maintained at ECS Development Facility (EDF)**
 - **Technical Document outputs posted to ECS Baseline Information System (EBIS) at <http://cmdm.east.hitc.com>, including 910-series affecting all sites and 920-series site-specific documents**
- **Inventory/Logistical Management (ILM): Remedy**
 - **Used at EDF to maintain property, repair, and software license data**
 - **Used at sites to create Maintenance Work Orders (MWOs) and record equipment maintenance activity**

EMD CMDM Server



ECS CMDM Server – Netscape

File Edit View Go Bookmarks Tools Window Help

Back Forward Reload Stop http://cmdm.east.hitc.com/ Go Search Print

Mail AIM Home Radio Netscape Search Bookmarks PVC Metrics GNU Emacs Referenc... esdis-proto.gsfc.nas... Members WebMail Connections BizJournal

Welcome to **Pete.hitc.com**
Pete is the web development machine for Configuration Management and Data Management (CMDM) Organization. CMDM is the CM control for project ECS.
Raytheon Systems

Tools Frames Navigator ECS Home Internet Search NCR web ECS Baseline

Hughes ECS web sites

ECS INFO	EOSDIS Core System information for scientists.	EDHS	ECS Data Handling System. Search and view project documents.	Earth Pages	Internet resource for information related to earth science.
ECS M & O	ECS Maintenance and Operations home page.	ECS FOS	ECS Flight Operations System home page.	Release B S & V	ECS Release B System Verification home page.
Release B DSS	ECS Data Server Subsystem home page.	DRUED	ECS Developer's Resource for Usability and Evaluation Database system.	RTM	ECS Requirements and Traceability Management home page.

NASA EOS web sites

EOS Project Science Office	EOS Project Science Office home page.	ESE NASA	Mission To Planet Earth home page.	EOSDIS Data Info System	Earth Observing System Data & Information System
EOSDIS IMS	NASA EOSDIS Earth Observing System Data Gateway.	TRMM Office	Tropical Rainfall Measuring Mission Office.	NOAA	National Oceanic and Atmospheric Administration.
Landsat 7 FOT	LANDSAT 7 home page.	Goddard DAAC	GSFC Earth Sciences Distributed Active Archive Center.	EDC DAAC	EDC Land Processes Distributed Active Archive Center.
Langley DAAC	Langley Atmospheric Sciences Distributed Active Archive Center.	NSIDC DAAC	National Snow & Ice Data Center Distributed Active Archive Center.	NASA JPL	NASA home page.
Global Change	Global Change Master Directory.	TSDIS	TRMM Science Data and Information System.		

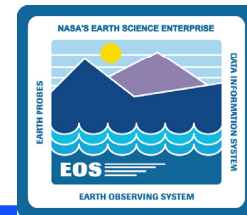
Last Modified: January 8, 2003

Point of Contact:

Steve Haupt (301) 925-1137 shaupt@eos.east.hitc.com

Document: Done (12.93 secs)

EMD Baseline Information System (EBIS)



ECS Baseline Information System, mirror site – Netscape

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Mail AIM Home Radio Netscape Search Bookmarks PVC Metrics GNU Emacs Referenc... esdis-proto.gsfc.nas... Members WebMail Connections BizJournal

EBIS Home Tech Docs VDD Interrogation Custom SW COTS Rel COTS Inv Modes SMC

EMD Baseline Information System

Raytheon Systems

Tools EDHS NCR web

Number of hits on this site since 11/01/98: 30007

EBIS Bulletin:

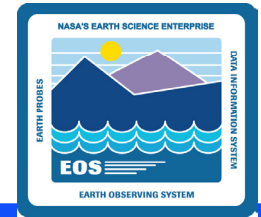
1. A new item: "Merge Forms, CSETs, NCRs, & Spreadsheets" is available.

Technical Documents	EMD Baseline Technical Documentation
Drop 6A.08 Tracking	Detail Information on 6A.08 Custom Code CCRs, Deliveries, and Installation Status
Drop 7.00/7.01 Tracking	Detail Information on 7.00 and 7.01 Custom Code CCRs, Deliveries, and Installation Status
Engineering S/W	Engineering Software release information
COTS S/W Tracking	Detail Information on COTS S/W CCRs, Deliveries, and Installation Status
Technical Directives	Engineering Technical Directives, and the CCRs that authorized them
Release Notes/CCRs	Shows EMD Change Record, including all Release Notes w/ CCRs
Pre-Ship Reviews	PSR documents– Installation instructions, VDD drafts
MergeForms, CSETs, NCRs, & Spreadsheets	STTS MergeForms, ClearCase CSET data, DDTS NCR data, and Excel Spreadsheets
CCRs	Approved CCRs (pdf format)

Document: Done (2.62 secs)

COTS COTS Drop Drop Drop Drop Drop Drop Drop Drop Drop

EBIS List of Technical Documents



ECS Baseline Information System, mirror site – Netscape

File Edit View Go Bookmarks Tools Window Help

Back Forward Reload Stop http://cmdm.east.hitc.com/baseline/ Go Search Print

Mail AIM Home Radio Netscape Search Bookmarks PVC Metrics GNU Emacs Referenc... esdis-proto.gsfc.nas... Members WebMail Connections BizJournal

EBIS Home Tech Docs YDD Interrogation Custom SW COTS Rel COTS Inv Modes SMC

ECS Baseline Technical Documentation

Inquires since 6/25/98: 11183

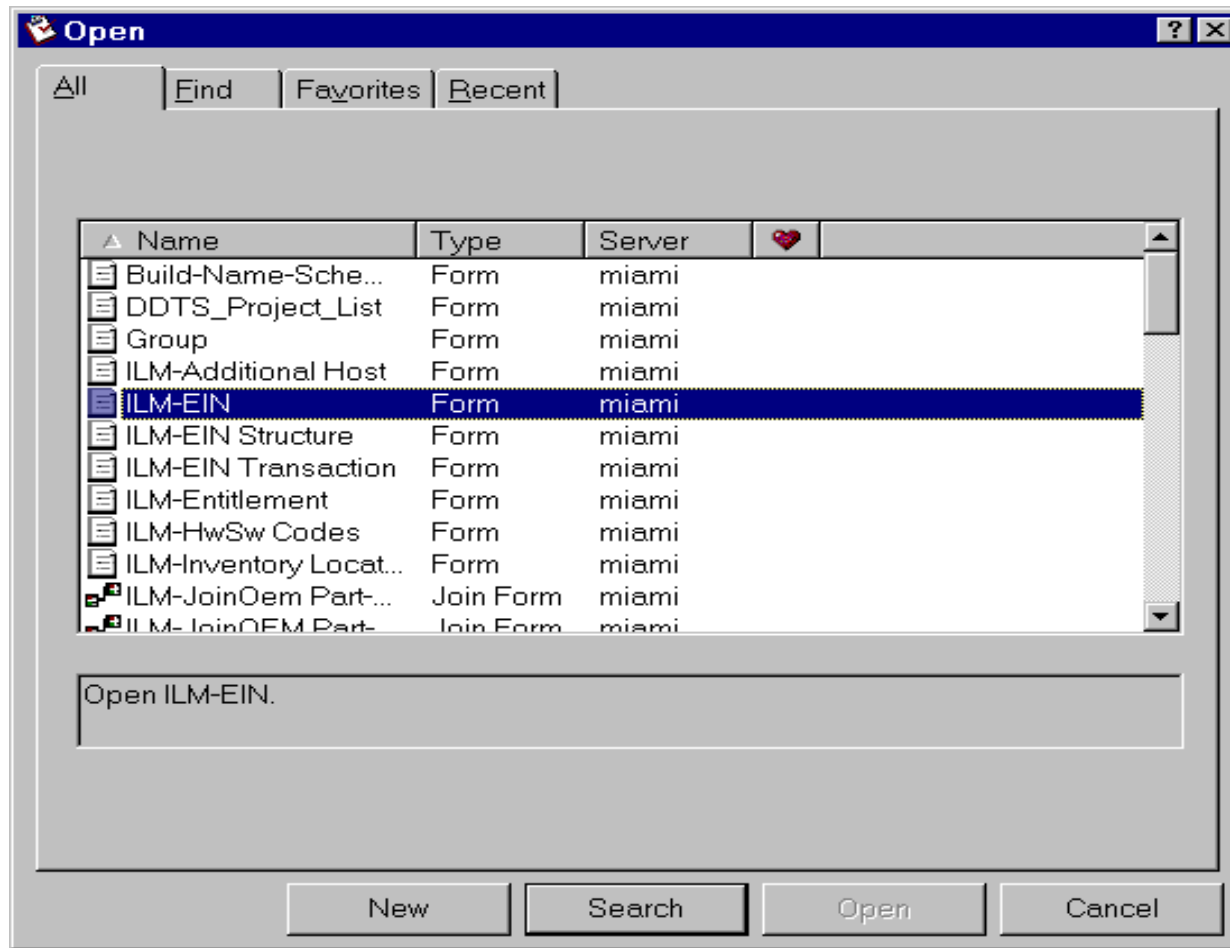
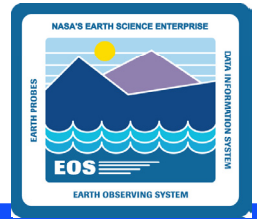
Technical Documentation Notes:

- Documents highlighted in **PINK** are restricted documents. Users will not be able to access restricted documents from the **cmdm.east.hitc.com** baseline mirror site. Contact CM for access to the restricted documents.
- If you wish to print out this table listing all technical documents, you will need to set your web browser printer orientation to **Landscape**.
- All **Official** documents have the new **9xx-TDX-xxx-Revxx** document numbers.
 - 9xx**: Document series number
 - TDX**: TD=Technical Document, X=site identifier (A=Applicable to all sites, E=EDC, G=GSFC, L=LARC, N=NSIDC, S=SMC, V=VATC, P=PVC)
 - xxx**: Document ID within a document series.
 - Revxx**: Revision number xx
 (example: 920-TDG-001-Rev01 is document 920 series for GSFC DAAC, document ID 001, revision 01)
- Each document has a "Current" and "Previous" folder. Navigate up by clicking on "Parent directory".
- Previous versions of documents reside in the "Previous" folder.

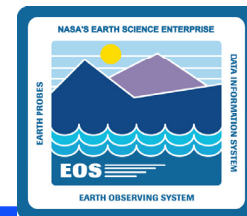
905 ECS System	
001 ECS System Baseline Specification	905-TDA-001-Rev01.pdf
002 ECS Host Naming Convention	905-TDA-002-Rev01.pdf
910 General Baseline	
002 Software Port Mapping	910-TDA-002-Rev12.pdf
003 COTS S/W VERSION B/L REPORT (ClearCase BLM)	910-TDA-003-Rev159.html
005 SITE-HOST MAP REPORT (ClearCase BLM)	910-TDA-005-Rev112.html
008 Baseline Install Matrix	910-TDA-008-Rev03.pdf
009 ECS Operational Directory Structure	910-TDA-009-Rev03.pdf
011 ECS Custom Code File Permissions	910-TDA-011-Rev00.pdf
012 Drop 4P Domains and Baseline Data	910-TDA-012-Rev01.pdf
015 Drop 4P1 Domains and Baseline Data	910-TDA-015-Rev01.pdf
016 Drop 4PL Domains and Baseline Data	910-TDA-016-Rev01.pdf
017 Baselined Documents By Title Report	910-TDA-017-Rev00.pdf
018 Baselined Documents By Numbers Report	910-TDA-018-Rev00.pdf
021 Sybase SQL Server	910-TDA-021-Rev00.pdf
022 Custom Code Configuration Parameters	910-TDA-022-Rev06.pdf
023 CRITICAL COTS SOFTWARE LIST (ClearCase BLM)	910-TDA-023-Rev96.html
024 SGI IRIX 6.5 Config. Parameters	910-TDA-024-Rev00.pdf
025 SYBASE ASE 11.5.x/11.9.x/12.0/12.5 Config. Parameters	910-TDA-025-Rev18.pdf
026 ESDT Definitions Document	910-TDA-026-Rev01.pdf
030 COTS S/W Where-Used Reports (ClearCase BLM)	910-TDA-030-Rev65.html

Document: Done (6.289 secs)

Remedy OPEN Dialog for ILM Access



New ILM-EIN Entry Form



Remedy User - [ILM-EIN (New)]

File Edit View Tools Actions ILM Reports Window Help

New ILM-EIN Save

EIN Parent EIN ECS Name

Part Information

Serial No Part No Add New Part

Description

MFR Hw-Sw Code Mod_Ver

Location & Purchasing Info Maintenance & Other Info Components Maintenance Contract History

Location Building Room Item Status

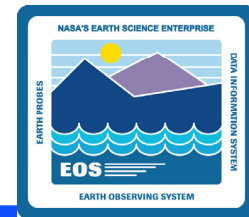
Vendor ID PO Number Cost Quantity

Receive Date Installation Date Audit Date Exp

EMD MOD

ttran ilmserv

ILM-OEM Parts Form



Remedy User - [ILM-OEM Parts (New)]

File Edit View Tools Actions Window Help

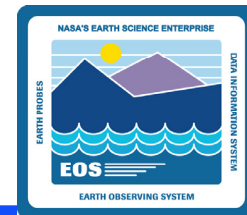
New ILM-OEM Parts Save

OEM Part Information

Part No	<input type="text"/>		
MFR	<input type="text"/>	Hw-Sw Code	<input type="text"/>
Description	<input type="text"/>		
Mod-Ver	<input type="text"/>		
Create Date	<input type="text"/>	Submitter	<input type="text" value="ttran"/> Last Modified By <input type="text"/>

Ready | ttran | miami

ILM-EIN Transaction Form



Remedy User - [ILM-EIN Transaction (New)]

File Edit View Tools Actions Window Help

Parent EIN Effective Date 9/30/03 TransactionType

Parent Information

ECS Name System Serial No

Part No Description

MFR Location Building Room

Install/Move/Ship/RTS Relocate Archive

Return (P)arent-(C)omponent Ship (P)arent-(C)omponent

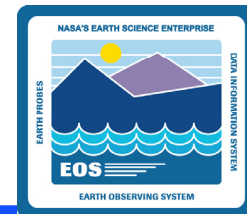
New ECS Name New Location

New Building New Room

Execute Transaction Select Components To Process

Ready | tran | miami

ILM-EIN Process Component Form



Remedy User - [ILM-Join-Process Component (Modify)]

File Edit View Tools Actions Window Help

Matching ILM-Join-Process Component 0:01

Parent EIN	Component EIN	Description	Serial No	Process	Active D...	Inactiv...
00011679	C0041911	SINGLE CHANNEL ULTRA	9191755100		9/11/	
00011679	C0041913	OPT INTERNAL 20GB 72	3ECOWW8A		9/11/	
00011679	C0041911	SINGLE CHANNEL ULTRA	9191755100		9/11/	
00011679	C0041913	OPT INTERNAL 20GB 72	3ECOWW8A		9/11/	
00011679	00003900	TAPE DRIVE - 14 GB -	803G2397		7/8/0	

Modify ILM-Join-Process Component 000000000074502|000000000025478 Save

Parent EIN 00011679 ECS Name NEWMAN

Component EIN C0041911 Process

Component's Information

Part No X5010A Serial No 9191755100

Description SINGLE CHANNEL ULTRA SCSI

MFR SUN Hw-Sw Code H Item Status

Location ASF Building C. T. Room 222

Active Date 9/11/01 Inactive Date

Ready Number 1 of 9 ttran miami